

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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In the Matter of)

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Amendment of Parts 2 and 15 of the
Commission's Rules to Deregulate the
Equipment Authorization Requirements
)
for Digital Devices)

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OCT 31 1996

ET Docket No. 95-19

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

COMMENTS OF THE
NATIONAL ASSOCIATION OF BROADCASTERS
ON PETITION FOR RECONSIDERATION

NATIONAL ASSOCIATION OF
BROADCASTERS
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October 31, 1996

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I. INTRODUCTION & SUMMARY

On May 14, 1996, the FCC released its *Report and Order* in the above-captioned proceeding.¹ In this decision the FCC adopted a revised regulatory approach to the authorization of personal computers and personal computer peripherals. On August 7, 1996, the Commission released a public notice² acknowledging the filing of two petitions for reconsideration of the *Report and Order*. This public notice solicited comments on these two petitions. However, on October 10, 1996, the Commission released another public notice³ acknowledging the filing, by Intel Corporation, of another document⁴ which the Commission has construed as yet another petition for reconsideration.

In this brief set of comments, the National Association of Broadcasters ("NAB")⁵ submits its views on several aspects of the Intel filing, and on certain regulatory

¹ See, *Report and Order* in ET Docket No. 95-19, 61 *Fed. Reg.* 31044 (June 19, 1996).

² FCC Public Notice, "Petitions for Reconsideration of Actions in Rulemaking Proceedings," released August 7, 1996, 61 *Fed. Reg.* 42021 (August 13, 1996).

³ FCC Public Notice, "Petitions for Reconsideration of Actions in Rulemaking Proceedings," released October 10, 1996, 61 *Fed. Reg.* 53923 (October 16, 1996).

⁴ The document in question is an untitled filing, dated July 18, 1996, and submitted in the above-captioned proceeding by two Intel employees.

⁵ NAB is a nonprofit, incorporated association of television and radio stations and networks which serves and represents the American broadcast industry.

components of the Commission's *Report and Order*. As set forth below, NAB believes that the Commission must recognize the serious potential for interference -- created by digital devices -- to the public's reception of broadcast services. Correspondingly, the FCC must adopt an effective and adequately enforced program of ensuring that these devices do not create such interference.

II. INTERFERENCE TO BROADCAST SIGNALS FROM DIGITAL DEVICES REMAINS A SIGNIFICANT PROBLEM.

In its petition, Intel argues that "... according to the FCC's own survey covering a two-year period, there were only a handful of valid EMI interference complaints from the public due to computer products. There is not a significant problem to remedy."⁶

However, it is not appropriate to draw the conclusion that interference to broadcast services from computer equipment is an insignificant problem based solely on a Commission study of interference complaints that it has received. Indeed, NAB has conducted a study that confirms our view.⁷

Broadcasters are heavy users of research studies, particularly in the area of audience research. As any broadcaster can attest, in order to obtain accurate information about a broadcaster's audience, a proactive research method must be employed. That is, the researcher must contact a representative sample, of a statistically significant size, of the population to be studied. The researcher must then query the individuals in the sample to get an accurate idea of who is listening to or viewing the station in question. An audience research report based solely on unsolicited comments received by the station

⁶ Intel filing at 3.

⁷ *Broadcast Technical Interference Complaint Study: What Does the Public Do When They Experience Signal Interference?* ("Broadcast Technical Interference Survey"), Ducey, Dr. Richard V., Research and Planning Department, NAB, June 1987. A copy of this survey report is appended.

from the public would be of very limited value. It would certainly *not* give an accurate picture of the station's total audience.

Likewise, a study of interference complaints received from the public by the Commission is of very limited value when it comes to estimating the impact that digital devices have on radio and television reception. For each person who actually complains to the Commission about this problem there are undoubtedly many more who are receiving interference and who: (1) are not contacting the Commission for help; (2) are accepting the interference as a "fact of life" and tuning out when the digital device is in operation; and/or (3) are not making the connection between the digital device and the interference and are instead blaming their poor reception on the broadcaster and tuning out. These principles were at the heart of the findings developed through a survey conducted by NAB in 1987. In this *Broadcast Technical Interference Survey, supra*, it was found that when members of the general public experience static or other interference on broadcast stations they *do not* contact the FCC or even the station. They either tolerate the interference or tune away from the station experiencing interference.

There is no question that computer interference to broadcast signals remains a significant problem. An informal survey of engineers employed in the NAB Science and Technology Department revealed that *all of them* have experienced interference to broadcast receivers in their homes -- interference caused by personal computer equipment. In one case, every time the computer's disk drive was accessed it wiped out reception of various FM stations on a receiver that was located about 20 feet away. In another case emissions from the monitor, and from the cable connecting the monitor to the CPU, caused interference to a television set one floor above. In the third case, whenever the

computer was turned on it completely wiped out AM reception on a radio located in the same room. In the fourth and fifth cases, whenever the computers were on, they caused interference to television reception in the home.

NAB does not suggest, based on the anecdotal evidence described above, that *all* computer owners are experiencing interference to broadcast signals that is caused by their computers. And, in cases where interference caused by computers is occurring, we also recognize that it is possible for the interference to occur even when the computer in question fully complies with the Commission's regulations for Class B digital devices (as likely was the case in at least some of the examples cited above). We offer the above anecdotal evidence only to illustrate why we are convinced that there *is* a significant amount of interference *still* being caused to the broadcast services by computers and other digital devices. A small number of complaints received by the Commission does not necessarily lead to the conclusion that this is not a problem.

III. **PERIPHERAL DEVICES SHOULD BE SUBJECT TO THE SAME "COVER OFF" TEST THAT APPLIES TO CPU BOARDS.**

In its petition Intel contends that "... it is not uncommon for video cards, I/O cards and the like to have their own clock circuits and to contribute significantly to the emissions profile of a system." Intel further states that "it is not reasonable to expect that such devices will show the required emissions profile (limit + 3 dB) with the cover removed."⁸

It is certainly true that many computer peripheral cards do have their own clock circuits, and that they do contribute significantly to the emissions profile of a computer

⁸ Intel filing at 9.

system. Contrary to Intel's position, however, it is not only reasonable but *imperative* that these devices, when connected to a CPU board, be expected to comply with the "Part 15 + 3 dB" limit with the cover removed — and with the Part 15 limit with the cover attached.

NAB is extremely concerned about the possibility that system integrators will "mix and match" certified computer components with those authorized under the Declaration of Conformity procedure to form computer systems that do not meet the Commission's Part 15 emission limits. We ask the Commission to remain vigilant in this regard, and to aggressively enforce its new digital device rules.

IV. INDIVIDUAL AUTHORIZATION OF COMPUTER CASES IS NOT AN ACCEPTABLE OPTION

In its petition, Intel also suggests that the Commission should relax the emission restrictions that currently apply to CPU boards, and that it should compensate for these relaxed requirements by adding a new authorization requirement for computer cases.⁹

This idea should be rejected because it is not possible to guarantee that a computer case will provide the same level of shielding for a wide variety of enclosed circuit configurations. The holes in the case that provide access to the disk drives, power supply and peripheral cards can allow a significant amount of RF energy to escape if the CPU board inside has emission characteristics that direct RF energy through these holes. A particular CPU board may not direct a significant amount of RF energy through the holes in a particular case; but another CPU board may direct substantial amounts of energy through the same holes. The difference in the amount of energy that escapes is dependent

⁹ *Id.* at 8-9.

on the characteristics and configurations of the various CPU board components that act as transmitting antennas for the RF energy in use on the boards.

It is possible to test a particular circuit board/case combination over a specified operating frequency range. However, to test the *case's* ability to shield emissions from *all* CPU boards and peripherals, one would have to test not only *all* operating frequencies but also *each one* of these frequencies, using *each possible location* of signal origination inside the case. If at some point in the future, as Intel suggests, noise source boards are developed that can accurately model all possible CPU board/peripheral card configurations -- and if test results indicate that these boards are capable of accurately predicting the shielding properties of a computer case for *all* possible CPU board/peripheral card configurations -- then at that time there may be sufficient reason to consider a proposal for authorizing computer cases. Until such time, however, the RF sources *inside* the case must remain the primary focus of the Commission's digital device regulations.

V. CONCLUSION

For the reasons stated herein, NAB urges the Commission to reject those proposals of Intel that would exacerbate the interference caused to the reception of broadcast services by personal computers and computer peripherals. Moreover, NAB

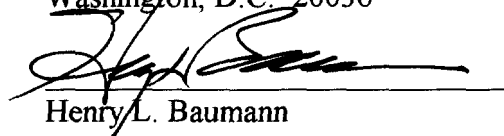
implores the Commission to maintain an effective enforcement program that will ensure that these devices do not create the interference that they truly are capable of causing.

Respectfully submitted,

**NATIONAL ASSOCIATION OF
BROADCASTERS**

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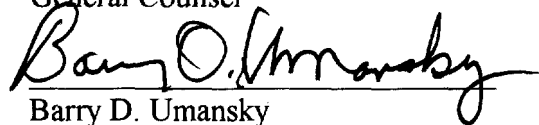
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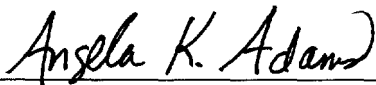
October 31, 1996

CERTIFICATE OF SERVICE

I, Angela K. Adams, do hereby certify that a true and correct copy of the foregoing Comments of the National Association of Broadcasters on Petition for Reconsideration was sent this 31st day of October, 1996, via first class mail, postage prepaid to:

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BROADCAST TECHNICAL INTERFERENCE COMPLAINT SURVEY
WHAT DOES THE PUBLIC DO WHEN THEY EXPERIENCE SIGNAL INTERFERENCE?

Richard V. Ducey, Ph.D.
Research and Planning Department
National Association of Broadcasters
Washington, D.C.
June 1987

Introduction

In several recent proceedings, the Federal Communications Commission has stated its belief that interference to broadcast reception is not a problem when there is an absence of complaints from the public. To test this assumption, the National Association of Broadcasters commissioned Market Facts, Inc. to conduct a special study of the American general public to find out what they do when they experience interference on broadcast signals. To conduct the study, several questions were added onto the weekly TeleNation survey, which is a weekly omnibus survey of 1,000 randomly selected adults, 18 years or older.

Methods

Sampling: Each week's TeleNation survey consists of a minimum of 1,000 interviews; half male and half female. TeleNation uses a full-replicated, random-digit dialing sample of all telephone households, including unlisted phone numbers.

Interviewing: Interviewing is conducted Friday evening through Sunday at Market Facts' central telephone center in Oak Park, IL. All interviewing is conducted via CRT, allowing complete control of questionnaire execution. Interviewing for this survey was conducted from April 24 - April 26, 1987.

Questions: This survey focused on interference potentially experienced by survey respondents when listening to the AM radio band (i.e. 540 kHz - 1600 kHz). The questions were designed by NAB in consultation with the I.E.E.E. C-63 Committee on Radio Interference Limits.

Findings

Nearly half (48.4%) of the sample indicated they had "... listened to AM radio, that is 540 to 1600 on your radio dial, in the past month." Of these AM radio listeners, nearly two-thirds (60.4%) have ever heard, "any kind of static or interference on the AM station or stations," to which they listen. About 15% of these AM listeners said they heard this static or interference "very frequently." The locations where respondents heard this interference most often are shown in Table 1. Clearly, most of the AM interference is experienced when listening to car radios (53.9%). About a third of AM listeners (34.5%) indicated that most of their AM interference was experienced while listening at home.

Table 1. Locations Where AM Interference Is Heard Most Often*

Location	% Respondents
At Work	8.9%
In Home	34.5
In Car	53.9
Other	1.0
Don't Know	1.7
(n)	(293)

*Results subject to $\pm 5.7\%$ sampling error

Actions Taken. Table 2 breaks out responses for what kinds of actions AM listeners take when they hear interference. About three-quarters of the respondents indicate that even when they experience interference on their AM radio stations they "keep listening" (73.0%) and/or try to "fine tune the station" (76.1%). About 61% indicate they change to a different station. About a third of the sample either "fix[es] the static myself," (33.8%) and/or "turns the radio off" (37.2%).

Absolutely no one (0.0%) in the sample indicated that ever contacted the Federal Communications Commission to report any interference to the broadcast signals, even though this response category was prompted (i.e. "aided recall" technique).

Table 2. Actions Taken When Broadcast Signal Interferences Occurs*

Action Taken	% Respondents
Fine tune the station	76.1%
Keep listening	73.0
Change stations	60.8
Fix static myself	33.8
Turn radio off	37.2
Have radio checked	5.5
Contact station	3.4
Contact FCC	0.0
OTHER	9.6
(n)	(291)

*Multiple responses permitted

Results subject to $\pm 5.7\%$ sampling error

Perceived Causes of Broadcast Signal Interference. The respondents were asked what they perceived to be as the causes of interference to their AM radio listening. These data are displayed in Table 3. Of course, these data should be interpreted with some caution since the respondents are not necessarily technically qualified to be making some of these judgements accurately.

It is clear from Table 3 that most of the perceived technical interference to the AM radio band is man-made. About a tenth of the respondents indicate they think that AM band interference is caused either by power lines (11.6%) or another radio station (9.6%). Nearly a quarter (23.8%) cite a variety of other man-made causes, not

including separately identified sources such as automobiles (5.8%), home electrical appliances (5.8%), tall buildings (4.4%) and airplanes (2.7%).

Table 3. Perceived Causes of Interference.

Causes of Interference	% Respondents
MAN-MADE	
Power lines	11.6%
Other radio station	9.6
Automobile	5.8
Home electrical appliance	5.8
Tall buildings	4.4
Airplanes	2.7
Other man-made	23.8
NATURAL CAUSES	
Weather	16.4
Mountains	4.4
Other natural causes	4.0
DON'T KNOW	10.2
(n)	(293)

*Multiple responses permitted

Results subject to $\pm 5.7\%$ sampling error

Conclusion

While the respondents in this survey are not necessarily technically qualified to be making these judgements, these data clearly support the conclusion that when members of the general public hear experience static on broadcast stations they do not contact the Federal Communications Commission, and in fact, they are not very likely even to contact the station to which they are tuned. The public appears to be relatively tolerant of the static in some cases, and in other cases they simply tune away from the station experiencing interference to find a clearer signal.

In any case, public policy should not be based on a theory that since the public does not complain about static, it must not (a) experience it, or (b) care about it. These data indicate that the public does experience technical interference, both man-made and natural, to the broadcast signals they are tuned to, and they do take actions, including tuning away from the station, when this interference is experienced.